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NOTES ON A NEWLY-DISCOVERED HABIT IN THE BLACKCAP WARBLER AND OTHER BIRDS.

By John Lowe, M.D., F.L.S.

The first part of this paper appeared in the pages of 'The Zoologist' for 1893. The later observations were made in Algeria and Corsica in the years 1894–5. Through the kindness of the Editor, I am enabled to give the whole of the notes in a continuous form. This it is advisable to do, as the later observations have to do with plants of species differing from those in the Canary Islands, although the habits of the birds are very similar.

In the garden of the Marianez Hotel, Orotava, Tenerife, are some large bushes of *Hibiscus rosa-sinensis* which in March are covered with brilliant scarlet blossoms. These being situated only a few feet from the balcony, one could, when sitting there, observe with great facility everything that passed on them. They were, at the time of my visit, a favourite resort of the Blackcap Warblers,* which came there to feed, taking but little notice of any one who might be on the balcony.

My attention was first called to these birds by observing the male every now and then fly to one of the flowers, creep along its stem, and peck at the calyx. On examining the flower to see what this proceeding meant, I found, in almost every instance,

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* The Italians call the bird "Capo-nera."

that the two upper segments of the calyx had a small piece bitten out, leaving an oval opening, while in some cases the calyx was torn right across. On opening the calyx of a large number of flowers, it appeared that under each of the two upper segments there was a drop of slightly sweet, watery fluid. There was no semblance of a distinct nectary or of a glandular structure. The fluid was not found under any of the other segments, nor was it present in flowers growing low down on the bushes, and it was also absent from the flowers of a pink variety which grew near.

In none of these instances was there any laceration of the calyx, but a few scarlet flowers which occurred here and there on trees of the pink variety had nectar on the two upper calyx-segments, and these were always bitten. The object with which these perforations are made is, as it would seem, not merely for the purpose of sucking the nectar, but in order to furnish a bait to attract insects to serve as prey: at any rate, whether made primarily with this view, they certainly answered this purpose, for several times I observed the bird seize an insect in the act of visiting the pierced calyx, which after being bitten shows a moist spot. When this dried up I observed the bird tear the calyx across, so as to cause a fresh exudation of moisture, but this was never done until late in the day, when the moisture around the original openings had disappeared; all the newly-expanded flowers had the oval opening in the calyx unlacerated. After prolonged watching, I could not find that more than two species of insects visited the calyx, and these—one a small species of bee and the other a small wasp—flew directly to the calyx without visiting the flower. No flies of any kind came, and no other insect except a species of ant, which evidently came to visit the few aphides living on the calyx. They did not enter the calyx, however, to feed on the nectar, as I subsequently found another species doing on the flowers of *Abutilon*.

It did not appear that any insect visited the interior of the flowers except a large species of *Bombus*, and this always went straight to the flower itself, and never attempted the calyx. It was able to reach the fluid through the openings which exist betwixt the petals at their base, and did not probe any openings between the petals other than the two upper ones. It did not visit the flowers which were situate low down on the bushes, and never entered the pink flowers, though the scarlet

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ones on the same bush were visited. The reason of this was obvious, for the petals of all the pink flowers overlapped at the base, leaving no opening by which the calyx could be reached. Honey-bees, which abounded on the neighbouring trees, did not visit the *Hibiscus*.

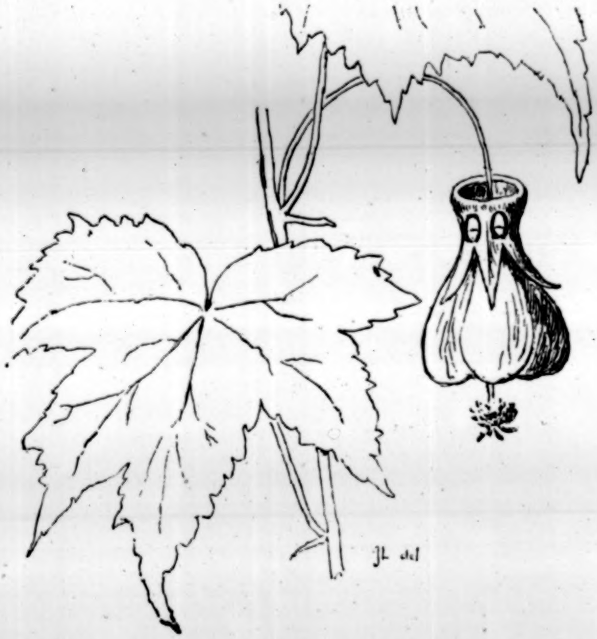

FIG. 1.—*Abutilon*, with calyx torn by *Sylvia atricapilla* and *Parus teneriffæ*.

At Monte, near Las Palmas, Grand Canary (March 22nd), I found that *Hibiscus rosa-sinensis* had been treated in the same way as at Orotava, by the "Capirote" (*Sylvia atricapilla*). But I also found that a shrubby species of *Abutilon*, another plant of the *Hibiscus* family, with large pendant orange-coloured flowers, had undergone a similar mutilation of the calyx.

In this instance, however, there were notable differences. The base of the calyx has nectar all round the receptacle, and not, as in *Hibiscus*, only on the inner surface of the two upper calyx-segments. Hence the openings were made on any or all of the calyx-segments. I did not observe that they were made by the Blackcap, though they might have been in some instances. The chief agent was a black-headed Titmouse (*Parus teneriffæ*, Tristram), which can scarcely be regarded as a nectar-eater. The object of this proceeding seems to be to afford a ready means by which the ants may arrive at the nectary. These, after the calyx is torn (never before, owing to the pendant character of the flower), enter in great numbers, and after consuming the nectar are found in a semi-torpid state, making no attempt to escape on being disturbed. They thus fall an easy prey to the Tits, which visit all the flowers at short intervals during the day, and clear off the ants. Another bird closely resembling the Willow Wren, but which builds its nest in palm and ficus trees, also makes periodic visits to the *Abutilon* flowers for the purpose of feeding on the ants. Canon Tristram informs me that he has named this *Phylloscopus fortunatus*. I could not observe that it took any part in lacerating the calyx. Late in the day the Titmice may be seen vigorously tearing the calyx, apparently with the object of producing a fresh exudation to attract the ants, the supply of nectar having been exhausted.

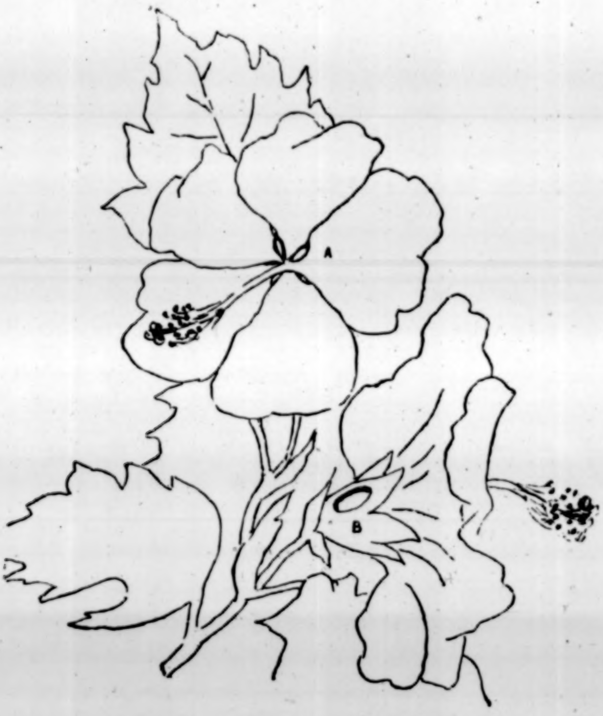

FIG. 2.—*Hibiscus rosa-sinensis*.
A. Openings visited by *Bombus*; B, ditto, by *Sylvia atricapilla*.

The only insect which I found visiting the interior of the flowers of *Abutilon* was a large species of *Bombus* which climbs up the stamens of the pendant flower and probes the nectary through all the openings at the base of the petals. These are much wider than in *Hibiscus*, and all equally visible to the bee. The axis of the flower of *Hibiscus*, on the contrary, being horizontal instead of vertical, the bee on entering along the upper surface of the stamens sees only two openings through which light appears, the other three being below the point of vision and partly concealed by the stamens. These two openings are probed by the bee, and they exactly correspond with the spots on the two upper calyx-segments where alone the nectar is found.

In this fact, and in the absence of nectar in the pink variety, where, from the overlapping of the petals, no openings exist at the base, and also from the fact that no nectar is found in the lowest flowers on the *Hibiscus* which are not visited by the bees, we see a striking proof of the correctness of the theory that nectaries are due to the irritation caused by insects.

On this subject Professor Henslow says:—"The glands are occasionally borne on the sepals, as of the Lime. . . . . Hence no rule can be established as to the places where one would be likely to find honey on *à priori* grounds. . . . . With regard to the origin of honey-bearing organs or 'nectaries,' there are many reasons for inferring their existence to be due to the direct irritating action of insects themselves when searching for juices as food or otherwise." *

A device, similar to those above mentioned, I found practised in the Grand Canary on another species of plant, *Aloe vulgaris* or *vera*. In this instance the corolla was bitten on the upper surface, close to the base, thus enabling insects to arrive at the nectar easily, which, in consequence of the length and narrowness of the tube, they could not otherwise do. All the flowers of this plant growing near the Gran Caldero were thus mutilated.

Sitting down to watch, I found that the Blackcap and the smaller Warbler (*Phylloscopus fortunatus*) visited all the flowers in search of insects. Being somewhat late in the day, I did not see either of them tear the flowers, but this, as a rule, is done in the early morning. The *Phylloscopus*, indeed, so far as I could observe, did not in any case tear the flowers, but only made use of them when torn by the two other species.

It is, of course, possible that the Blackcap may, in the first instance, feed on the nectar, but certainly neither it nor *Phylloscopus*, at their subsequent visits, does anything more than search for insects.

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* 'The Making of Flowers,' pp. 107, 108.

Since the foregoing observations were written I have had the opportunity of making fresh investigations on this subject in Algiers.

In the garden of the Hôtel St. George, Mustapha Supérieure, a number of good-sized shrubs of *Abutilon* were found in full flower. These were of several varieties. At the time of my arrival I examined them all carefully. On March 12th, 1894, not a single flower had its calyx torn, and though I watched diligently I could not discover, either in this or the adjoining gardens, any Blackcap or other Warbler. Nor were there any species of *Bombus* visiting the flowers. Hive-bees were there in profusion, but they did not, as a rule, enter the flowers, as they could probe the nectary through the openings at the base of the petals. On one plant, however, where the flowers were large and well formed, they did enter in the usual way. A few days later, at the Jardin d'Essai, numbers of Blackcaps were seen, and I found a good-sized bush of *Abutilon* on which all the calyces were torn, just as had been observed in the Grand Canary.

The reason why those in the garden of the "St. George" were not torn was apparently that, owing to the cold wet weather which had lately prevailed to an unusual degree, there were scarcely any insects to be seen. Even the ants, the nests of which were abundant, did not stir abroad, and were not to be seen on the plants or trees. It was not until finer weather set in, on March 23rd, that the warblers put in an appearance. On this day the Blackcap, Garden Warbler, and a *Parus* closely resembling *P. teneriffæ*, were seen. The first of these was observed tearing the calyx of *Abutilon*, which had hitherto shown no trace of laceration; a day or two subsequently nearly the whole of them were torn on all the trees, with one exception. This was a large, coarse-leaved variety with yellow flowers, which I found entirely devoid of nectar. For some unexplained reason the *Bombus* did not visit this plant.

The Garden Warbler, when first noticed, was busily engaged in creeping up the flower-spikes of *Gladiolus* (*Antholyza*) *ethiopicus*, which is very abundant in most of the gardens in Algiers. Beginning at the lowest flower, it was seen to pick out a small piece at the base of each corolla-tube in turn as it ascended the stem. I could not ascertain whether this was done for the purpose of sucking the nectar, of which the corolla was full, but it seems probable that this was the case. The act was very quickly performed, if there was any suction, as only two or three seconds were spent at each flower. As to the question of these openings being made for the purpose of attracting insects, there were so few of these about, owing to the cold, that it was impossible to arrive at any definite conclusion. There was, however, no doubt that, with one insect at least, they had this result. The hive-bees, which up to the time of the appearance of the birds had frequented these flowers in great numbers, but invariably entering at the mouth of the corolla, and never attempting to obtain the nectar along the tube, or showing the least tendency towards making an opening there, now took their way direct to the openings made by the birds, seldom entering the corolla at all. I was told that an opinion had been expressed by an eminent naturalist that these openings were made by mason-bees. Some fine punctures on the corolla-tube seem to give an air of prob-

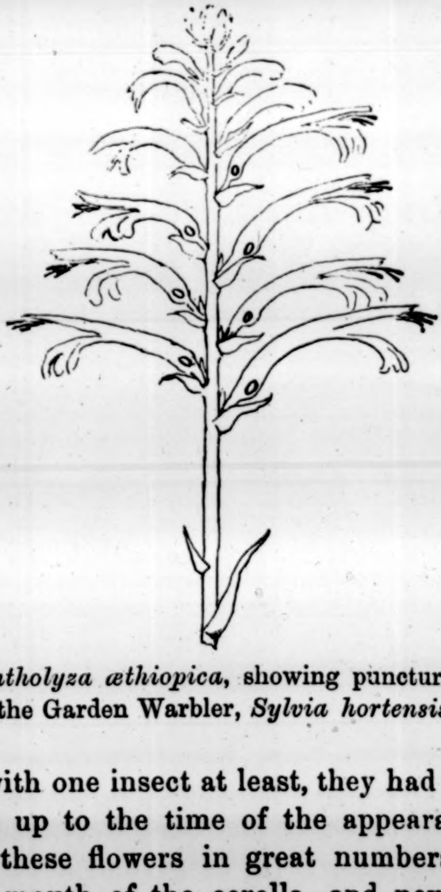

FIG. 3.—*Antholyza æthiopica*, showing punctures made by the Garden Warbler, *Sylvia hortensis*.

ability to some such idea. These are occasionally, but not frequently, found about half-way up the corolla. They are circular and very minute, not at all what one would expect as the work of a mason or any other bee. The former I have watched for carefully, but have never seen one near the flowers, and I cannot learn that any one has seen them in the act of making the openings. They are admitted to be very rare, whilst the openings at the base of the flower are almost invariably present. The hive-bees certainly do not make them, and humble-bees do not appear to visit these flowers at all; at least I have never seen one do so, whilst I have seen the openings actually made by the Garden Warbler.

On one exceptionally fine day I found the ants visiting the flowers on a few of the stems, and I cannot doubt that in prolonged fine weather they would swarm over the places where food is so abundant, and that other insects would do the same.

It seems more than probable that the habit displayed by the Blackcap has the same object which it clearly had in the Canary Islands; and it is remarkable that in Algiers the only plants thus dealt with are not natives. I could not find throughout Algeria any native plant that had been thus dealt with.

In the following year (March 13th, 1895), numbers of *Sylvia atricapilla* were observed at Ajaccio, in Corsica. At short intervals they were seen to visit ripe clusters of the fruit of the Yucca in the hotel garden. After creeping over the fruit-spike, searching for insects, which they were seen to take, they afterwards spent some time pecking at the ripe pulp and tearing off pieces of the outer skin. This is done in the early morning; later in the day they do not peck at the fruit in this way, but at regular intervals creep over the spike, evidently in search of insects.

All the preceding observations were carefully and repeatedly made, and though it is desirable that they should be confirmed by other observers, I am well assured of their exactness. They suggest some striking points for consideration:—

(1.) As to the object with which the openings are made: is it for the purpose of obtaining the nectar? To a certain extent this may be so. It shows a marvellous instinct in the Blackcap that it can find out the exact spot in the calyx under which the drop of nectar lies, and if to obtain this is its sole object in making the openings, it is difficult to understand why it should, later in the day, tear the calyx across. This could only cause an exudation of sap which might attract insects, but could not serve as food for the bird. So far as the *Hibiscus* is concerned, it is scarcely credible that the nectar is the sole object sought by the bird. At any rate, it is obvious that it takes advantage of its own act to secure insect food. Whether this is the primary object is not so clear. It may be that the Blackcap is a nectar-eating bird, though there are no observations to show this. I certainly think it very probable that the Garden Warbler punctures *G. antholyza* for the purpose of obtaining the nectar, in the first instance; but in the case of *Abutilon*, I cannot believe that *Parus* would search for nectar; and very clearly I think the laceration of the calyx was made with the object of enabling the ants to reach the nectary. *Phylloscopus* may possibly be a nectar-eater, but this is doubtful. It certainly does not tear the flowers, and only acts as a poacher, visiting the flowers torn by other birds for the purpose of taking its insect prey. An interesting example of this kind of poaching is given below.*

(2.) How far is the habit of puncturing the flowers and afterwards searching for the insects an acquired one? The puncturing is common with true nectar-eating birds—*Zosterops*, *Nectarinia*, and others. My friend Dr. Percy Rendall says of *Cinnyris senegalensis*:—"Scarcely a flower in my garden yielded any flowers the corollas of which had not been pierced by individuals of this species" ("Ornithology of the Gambia," 'Ibis,' April, 1892).

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* Mr. N. B. Moore has made observations at the Bahamas on the *Certhiola flaveola*, which obtains nectar from the flower of *Verea crenata* by thrusting its bill at once through the petals into the nectary. It is only after the bird has made an opening that black ants are found in the nectary. But these birds also poach on the Woodpecker's preserves. One day Mr. Moore observed a *Picus varius* extracting sap from a logwood sapling, and as the Woodpecker flew away two *Certhiolæ* appeared, perched near the sapling from which the juice was oozing, and by cunningly thrusting in their penicillate or bristle-tipped tongues commenced to lap or suck the fluid into their mouths. This practice was constantly observed afterwards. Mr. Moore fixed the bowl of a teaspoon in a fork of the same tree and placed some strained honey in it. In three days the *Certhiolæ* found this, and commenced to feed on it. They were followed by another bird, *Dendrœca tigrina*, and other species, which also attacked the Woodpecker's sap-pits. These are interesting instances of apparent intelligence on the part of birds. (Proc. Boston Soc. Nat. Hist., Jan. 1878).—*From 'Nature,' April 25th*, 1878, p. 509.

"*Cinnyris olivaceus* and *perrauxi* split open the flowers of *Loranthus kraussianus*, and cause their fertilisation. Bees follow in their wake to obtain their nectar" (M. S. Evans, 'Nature,' Jan. 3rd, 1895). While examples of this kind can be multiplied, there are no recorded instances, so far as I know, of birds visiting the flowers which they have themselves torn for the purpose of capturing insects. It is especially noteworthy that the three plants which are thus dealt with in the Canary Islands are all exotics, and that no native plants are treated in the same manner. Thus *Hibiscus rosa-sinensis* is a native of China, *Abutilon* of S. America, and *Aloe vulgaris* of the West Indies. There is thus every reason for believing the habit to be an acquired one.

(3.) I may note that *Bombus* goes directly to the flower of *Hibiscus*, and though the openings are made in the calyx it never visits these; while in this country it even makes openings in the calyx of the Fuchsia in preference to visiting the flower.

(4.) So far as I could observe, the punctures were made only by the male Blackcap, and never by the female. Further observation may, however, disprove this.

MEMOIR OF THE LATE HENRY SEEBOHM, F.L.S., F.Z.S.,

SECRETARY TO THE ROYAL GEOGRAPHICAL SOCIETY.

JUST as our last number was going to press we received the sad and unexpected intelligence of the death of this distinguished ornithologist, who passed away on November 26th, at his residence in London, at the comparatively early age of sixty-three. His loss will be deplored by a wide circle of friends, amongst whom may be reckoned very many readers of this Journal, to say nothing of those to whom he was known only by his published works as a leading authority in his special department of zoology.

Few names indeed are better known than his in connection with Birds, not only of the British Islands, but, it may be said, of the world. As a traveller and collector in four continents he had made a special study of bird-life in all the countries he visited, and few naturalists probably have seen and studied a larger number of species in their proper haunts, or made better use of opportunities for observing them. We need only turn to a single work of the many he published, namely, his 'British Birds,' in four royal octavo volumes, to be assured of this; for it abounds in original observations which have thrown much light on the geographical distribution, migration, and nesting haunts of many of the rarer species concerning which previous writers. from their own knowledge, had comparatively little to relate. Indeed, as regards several of these, we are indebted to him for the discovery of their breeding-places, and for original descriptions of their nests, eggs, and young. His extensive collection of bird-skins and eggs, so many of which were obtained by himself, furnished the most ample materials for his descriptions, and enabled him to correct the misapprehensions of some of his fellow-workers, and to supplement their remarks with valuable observations of his own. That his teaching in some respects was not universally acceptable, or implicitly followed, is perhaps not to be wondered at, for he held peculiar views on the subject of classification and nomenclature—views which, though often striking in their novelty, will scarcely stand the test of serious criticism (*cf.* Zool. 1890, p. 230). For this reason, so far at least as classification is concerned, it may be safely predicted that his reputation will not depend upon this portion of his work.

Nor can we believe that certain fanciful theories of his—for example, that concerning the original dispersal of the *Charadriidæ* from the shores of the Polar Sea, during the Glacial Epoch (*cf.* Zool. 1886, p. 43)—will find general acceptance.*

We do not propose, however, in this place to offer any detailed criticism of his work, for which the space at disposal would be wholly insufficient. We desire rather to call to mind the extent of his labours in the cause of ornithology, and to show how much we are indebted to him for the amount of useful information which he has disseminated by his writings, and for his encouragement of research by collectors in little-known parts of the world.

Born at Bradford, in Yorkshire, in 1832, of an old Quaker family, Henry Seebohm was educated at the Friends' School at York, where his early love of Nature was shown by the creditable collections which he there formed of birds and birds' eggs. As he grew up, he became filled with a desire to travel, and though for many years engaged in business in Sheffield, as a manufacturer of steel, he found time to make periodical excursions on the continent, at first to Holland, France, Germany, Denmark, Norway, and Heligoland, and thence to more distant countries, as Russia, Greece, and Asia Minor, eventually going as far south as the Cape of Good Hope, and as far west as the United States of America.

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* See also 'Zoologist,' 1888, p. 198.

In the summer of 1875, in company with Mr. J. A. Harvie Brown, he undertook a journey to the valley of the Lower Petchora in North-Eastern Russia, for the purpose of discovering, if possible, the breeding-haunts of such birds as the Grey Plover, Little Stint, Knot, Curlew Sandpiper, and Sanderling; and having found the eggs of the two first-named species (subsequently figured in 'The Ibis'), he started two years later with Capt. Wiggins, and penetrated still further east to the valley of the Yenesei in Siberia, in hope of further oological discoveries. The accounts which he published of these journeys in his two volumes, 'Siberia in Europe' and 'Siberia in Asia' (both now out of print), are amongst the most entertaining and instructive narratives of travel and natural history which have been written in the present generation.*

In the earlier of these two volumes he gave an account of a visit to Heligoland and his meeting with the veteran ornithologist Heinrich Gätke, whose now famous work on the Birds of that remarkable island† is by this time in the hands of every naturalist.

The ornithological results of these two expeditions induced him to turn his attention more closely than he had previously done to the unexplored parts of Northern Asia, where it was thought that time would reveal the undiscovered breeding-haunts of several birds known only as periodical visitors to the coasts of Great Britain. To the birds of Japan, also, he paid particular attention, and having, with the assistance of Capt. Blakiston and other correspondents, formed an extensive collection of the birds of that country and their eggs, he published a comprehensive work, 'The Birds of the Japanese Empire,' which at once took rank as the most authoritative work on the subject. In the prosecution of this undertaking, he employed collectors and purchased specimens from every available and reliable source, determined to make his work as complete as possible. These collections, with the greatest liberality, he subsequently presented to the British Museum, and still further benefited science by writing one of the volumes of the great 'Catalogue of Birds'—that containing the Thrushes and Warblers—and by arranging and cataloguing the unrivalled collection of eggs, to which he was a munificent donor.

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* Outlines of these expeditions have been already given in the pages of this Journal in reviews of the books named. See 'Zoologist,' 1881, pp. 75, 116, and 1888, p. 41.

† See 'The Zoologist,' 1894, p. 363.

From a pictorial point of view, few more beautiful works have been issued from the press (if we except those of Gould and Elliot) than his quarto monograph of the Plovers, Sandpipers, and Snipes. In this he figured all the most remarkable species of which no adequate illustrations had been previously published, and furnished analytical keys to the genera and species.*

To enumerate the many important papers on ornithological subjects which he contributed to 'The Ibis,' 'The Zoologist,' and to the 'Proceedings of the Zoological Society,' would require the preparation of a list that would fill several pages. It must suffice if we remind our readers of his contributions to this Journal only.

Dating from the commencement of the Third Series (1877), we find him credited with the following communications:—

Blue Eggs of the Cuckoo, 1880, p, 361.

Field Notes on the Reed and Marsh Warblers, 1880, p. 377.

A Visit to the Colony of Spoonbills near Amsterdam, 1880, p. 457.

On the Occurrence of the Rusty Grackle and Pallas's Grey Shrike in Wales, 1882, p. 109.

On a New Species of British Wren, *Troglodytes hirtensis*, 1884, p. 333.

On the Occurrence of the White-billed Diver, *Colymbus adamsi*, on the British Coasts, 1885, p. 144.

On the genus *Hæmatopus*, or Oystercatchers, 1886, p. 41.

The Black-throated Wheatear, *Saxicola stapazina*, and its Allies, 1886, p. 193.

On the Pheasant of St. Helena, 1886, p. 225.

On the Breeding of Arctic Birds in Scotland, 1887, p. 21.

Birds' Nests and Eggs, 1887, p. 137.

Turdus migratorius in the British Islands, 1891, p. 219.

A Comparative List of the Birds of Heligoland and those of the British Islands, 1891, p. 261.

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* For a detailed notice of this work see 'The Zoologist,' 1888, p. 197.

On the Common Wren of the Shetland Islands, 1891, p. 294.

The Proportion of Adult and Immature Birds amongst Accidental Visitors to the British Islands, 1893, p. 71.

Plumage of White's Thrush, 1893, p. 267.

At the time of his decease he was engaged upon a monograph of the Thrush family, and a new work on the Eggs of British Birds, with coloured plates, which, we understand, is in the hands of the publishers (Messrs. Pawson & Brailsford, of Sheffield), and may be expected to appear in June next.

Mr. Seebohm was a Fellow of the Linnean and Zoological Societies, and in 1890 was elected one of the secretaries of the Royal Geographical Society. A member of the British Ornithologists' Union since 1873, and of the more recently formed Ornithologists' Club, the latest honour conferred upon him was his election as President of the Hertfordshire Natural History Society. In all these various capacities he was widely known, and as widely esteemed.

ON THE OCCURRENCE OF THE WHITE-BILLED NORTHERN DIVER, *COLYMBUS ADAMSI*, IN NORFOLK.

By A. F. Griffith, M.A.

Among a considerable number of uncased birds obtained by the late Mr. E. T. Booth, and presented to the Brighton Museum by his widow since his death, is the specimen referred to by Mr. Howard Saunders on p. 695 of his 'Manual of British Birds.' Acting on the hint there given, the specimen has been carefully compared with others in the British Museum, and there is no doubt as to its identification. It was shot by Mr. Booth on Hickling Broad on December 14th, 1872.

His note-book for that period is still extant, though unfortunately all but three were destroyed after his death. An extract, I feel sure, will be interesting, not only on account of the description it contains of this bird, but also as an example of his method of observing and noting facts. It is a complete copy of the note-book for the eight days from Dec. 9th to 16th:—

"Dec. 9. Fearful gale from the S.W. Being unable to get on the open broad for the swell, I went all round the rondes, but saw no fowl of any sort.

12. Wind W. Ditches laid with ice. I noticed the Grey Crows hunting all round the water line of the Broad in hopes of finding some crippled ducks. I observed that they hardly took any trouble on the windward side, but on the lee side they searched carefully among the rubbish that had been blown on shore. Flying one after the other about two or three feet from the ground, and alighting whenever they thought they had a prize.

13. Frost, and the ditches all laid with strong ice. As very few fowl had appeared, we did not expect a continuance of severe weather, and before mid-day it came on to rain.

14. All signs of frost vanished. The morning was still, without a breath of air, and the water as calm as glass. Soon after daybreak I made out a Great Northern Diver on the south part of the Broad. The bird was busily engaged in diving for food, and I was able to scull up near enough to examine all its actions closely with the glasses. When I was between 70 and 80 yards off, it came up with a small Jack of 10 or 12 inches in length in its beak, held crosswise. This it kept shaking, apparently wishing to kill it before swallowing. After the bird had held it for four or five minutes it swam up within 60 yards of where I was, so I fired the big gun. It dived immediately, but soon reappeared on the surface badly wounded, and uttering the most mournful cries I ever heard proceed from the throat of a bird. I soon got close enough for a shot with the shoulder-gun at about 50 yards, which I thought would have ended the matter; but after receiving the charge the bird swam straight to the punt and came at me open-mouthed, scrambling on to the after-deck, [illegible] would have come right on board had it not been seized by the neck. It was an immature specimen, in good condition, weighing 8½ lb.; the beak white, with the exception of a dark mark down the upper ridge extending almost to the point; the inside of the mouth a dirty white; eye a very warm olive-brown; leg, outside black, inside white, edges light grey, toes black, webs white, with veins showing very plain down the centre.

16. Wind E. There were to-day hundreds of fowl—Mallard, Wigeon, Teal, and Pochard. The newspapers had announced a frost in the north, and although we felt no signs of hard weather in Norfolk, it was, I supposed, the cause of so many fowl being observed. I might have had several shots with the punt-gun

just after daybreak on Hickling Broad; but it being the day appointed for the Coot-shooting, I did not like to disturb them by firing at the fowl. The Coot-shooting was almost a failure, as there were hardly boats enough to surround the birds, and consequently but few were killed. I had left half-a-dozen wooden decoy ducks on the Sounds [at Potter Heigham], and they were carefully approached by two different boats during the afternoon, receiving in all the contents of no less than twelve barrels, and being so severely peppered that they had to be taken home to be repaired "

[The specific characters which distinguish the White-billed Northern Diver from the closely-allied *Colymbus glacialis* have been pointed out by Mr. Saunders in his 'Manual,' and in greater detail by the late Mr. Seebohm in 'The Zoologist,' 1885, p. 144 (wrongly cited by Mr. Saunders as 1884, p. 140). Not only is there a difference in the colour of the bill, which has suggested the trivial name "White-billed," but the head and upper neck are glossed with green, while the lower neck is tinged with purple (the reverse being the case with the Great Northern Diver), and the white streaks on the upper throat-band are 6 in number with 10 on the lower one, instead of 12 on the upper and 18 on the lower as in *Colymbus glacialis*. It is also said that in the summer plumage the white spots on the scapulars are larger in the White-billed species, while those on the flanks and upper tail-coverts are smaller than in the allied species. Specimens of the rarer bird have been obtained on the coasts of Suffolk and Northumberland, the Suffolk specimen being figured from a photograph in Babington's 'Birds of Suffolk.' This example, however, being in immature plumage, the distinctive characters, seen only in the adult, are not apparent.—Ed.]

NOTES AND QUERIES.

MAMMALIA.

The Harvest Mouse in Lancashire.—The wording of Byerley's remark in his 'Fauna of Liverpool,' referred to (Zool. 1895, p. 419), is as follows:—"Not unfrequent in wheatstacks, barns, and fields." A large proportion of Byerley's records for other species are from the Wirral district of Cheshire, and many of his records want verification. Though it occurs sparingly in Lancashire and Cheshire, it is certainly not as plentiful as might be inferred from Byerley's remarks. A short time since I came across a report of the Council of the Manchester Natural History Society for 1864, which mentions the gift, by J. Glover, Esq., of a Harvest Mouse and nest from Halsall Moss, Southport. This nest is now in the Owens College Museum, Manchester.—T. A. Coward (Bowdon).

Wolves in France.—The Bulletin of the Ministry of Agriculture gives the number of Wolves destroyed in France last year, or rather of those for the destruction of which a premium was asked, as being 245, as against 261 in 1893, and it has to be noted that the total has been decreasing since 1883, when the Government increased the premium. In the following year 1316 Wolves were accounted for, but they seem now to be extinct in many departments, the majority of those killed last year being in the central region of France—the Charente (51), the Haute-Vienne (42), the Dordogne (33), the Vienne (19), and the Creuse (14), being all contiguous departments—whereas in the eastern departments, where at one time they abounded, there are now very few.

Marten in Co. Limerick.—I have to report the capture of a Marten (*Martes sylvatica*) in the Co. Limerick. It was caught in a trap on a heather-clad hill at Glinstal, the property of Sir C. B. Barrington, some time last autumn. I do not know the exact date of the capture, but I saw the skin, which appeared to be that of a full-grown animal. In your article on the Marten in Ireland, in 'The Zoologist' for March, 1894, you stated that you had no records of the Marten in Co. Limerick, so this capture will be of interest.—G. H. Pentland (Black Hall, Drogheda).

BIRDS.

Eagles in Kent.—Towards the end of December last, the daily papers contained numerous letters, paragraphs, and even articles, referring to the destruction of certain Eagles in Kent, which, of course, were termed "Golden Eagles," as is usually the case in provincial newspapers when any large bird of prey happens to get shot or trapped. A great deal of ink is generally wasted over the matter, and it is curious to note the different light in which such an incident is regarded by different classes of writers. The provincial paragraphist considers the death of a supposed "Golden Eagle" as an event to be announced with some flourish of trumpets; dimensions and weight are given, and usually exaggerated. In one such paragraph we read that the height of the bird was 3 ft. 6 in., and its weight 30 lbs., or three times as heavy as it was likely to be! The writers of letters "to the Editor" which follow the insertion of such paragraph, usually, and very properly, give vent to some expression of indignation at the wanton destruction of rare birds, and after bestowing various laudatory epithets on what they suppose to be this "king of birds," usually conclude by suggesting that an Act of Parliament should be at once passed to put a stop to such slaughter. The writer of an article on the subject in a daily paper goes a step further, and supplies a column or two about Golden Eagles and their ways, the nature of their haunts, food, and so forth; often very well written, but wholly inapplicable to the species whose recent demise is deplored. As a matter of fact, the so-called Golden Eagles which happen to be shot or trapped in the South of England in late autumn or early winter, hardly ever prove to belong to that species. If they are Eagles at all, which is not always the case—for many people do not know an Eagle from a Buzzard—they are in nine cases out of ten the young of the White-tailed Eagle, *Haliaetus albicilla*, which, as a British species, is much commoner than the Golden Eagle, and in the eastern and south-eastern parts of England may be considered to be an annual visitor in autumn and winter. As to the birds which were taken in Kent in December last, and were almost universally chronicled as "Golden Eagles," it may be well to give publicity to a contradiction of the statement in the following letters which were addressed to the editor of the 'Standard,' and were printed in the issue of that paper for Dec. 30th:—

"Sir,—A notice appears in the 'Standard' of Dec. 27th of another Golden Eagle being shot in Kent. It may interest some of your readers to learn that the one reported to have been shot at St. Lawrence, Kent, a short time back (Dec. 22nd) was an immature specimen of the White-tailed Sea Eagle, and in all probability the one now reported at Eastwell will prove to belong to the same species. The Golden Eagle is very rare in the South of England, and each year its appearance becomes more and more improbable, from its ceaseless persecution, both for the sake of its eggs and skin. One cannot but deplore the ruthless slaughter of these noble birds when tired out on migration to safer and more peaceful latitudes.—F. DYER (Grange Road, Ramsgate, Dec. 27th.")

"Sir,—The Eagle captured in Eastwell Park on Dec. 22nd is not a Golden Eagle, but a young specimen of the White-tailed Eagle.—J. T. CROCKETT AND SONS, Naturalists (7A, Princes Street, Cavendish Square, Dec. 28th.")

Blackgame in Lancashire.—On Nov. 18th a Grey-hen was shot by Mr. W. King-Wilkinson's keeper on Easington Fell, about twelve miles north of Blackburn. The nearest moors frequented by Black Grouse are those in the neighbourhood of Huddersfield (30 miles S.E.), Nidderdale (30 miles E.), and Cartmell Fell (30 miles N.W.). In 1864 an unsuccessful attempt was made to introduce the species at Whitewell. I cannot learn that any Black Grouse have been seen here since that date, until the occurrence of the present bird, which Mr. King-Wilkinson has kindly presented to the Blackburn Museum.—ROBERT J. HOWARD (Hawkhurst, Blackburn).

The Dispersal of Acorns by Rooks.—On this subject allow me to refer Mr. Clement Reed to a paper of mine in the 'Proceedings of the Dorset Natural History and Antiquarian Field Club' for 1891 (vol. xii. p. 132). The habit of Rooks carrying acorns to considerable distances and burying them is there detailed; and the quotation from Robinson's 'Natural History of Westmorland and Cumberland,' 1709, is there given, having been kindly communicated to me for that purpose by the editor.—O. Pickard Cambridge (Bloxworth Rectory, Dorset).

The Dispersal of Acorns by Rooks.—In Mrs. Hugh Blackburn's 'Sketches of Birds from Moidart,' of which a review is given in this number, the following observations on the habits of Rooks are of interest in connection with what has already been noted by other observers. Mrs. Blackburn says:—"The Rooks did not build here when we first came (in 1856), but only flew across the fen from Armadale on predatory excursions. At harvest-time they would carry off potatoes and hide them, sometimes forgetting where they were buried, and leaving them to come up in unexpected places the following spring. They also transplanted acorns we had sown, sometimes replacing them in a more favourable spot."

The Dispersal of Acorns by Rooks.—Referring to Mr. Clement Reid's observations under this heading in the last number of 'The Zoologist,' I may state that I once found a young oak-tree in a sheltered ravine amongst sea-cliffs on the northern coast of Hoy, Orkney. The tree was a little over six feet in height, and was growing luxuriantly amongst beds of primroses and ferns. A few Rock Doves bred near the place, and I concluded that an acorn had been brought by one of these birds; but where from? Unless it had been picked up on the sea-shore, it must have been carried a long way indeed. It could hardly have been brought by man, as the place was very remote, as well as difficult of access. Rooks occasionally crossed the Pentland Firth, and one of these birds might have conveyed the seed; but in any case the fact is interesting, and perhaps worth recording.—J. J. Armistead (Solway Fishery, Dumfries).

The Dispersal of Acorns by Rooks.—The U. S. Department of Agriculture has lately issued an exhaustive report by Messrs. Barrows and Schwarz, on the Common Crow of the United States (*Corvus americanus*), its food and habits in relation to agriculture. A careful examination was made of the contents of the stomachs of more than 900 of these birds, procured in different months of the year, and the results were tabulated. Several chapters deal respectively with the animal, insect, and vegetable food of the Crow, and the relative percentages of animal and vegetable food are considered. Under the heading "Vegetable Food," in chapter iv., we read (p. 97), "Acorns in Crows' stomachs reached the maximum in October, when they formed 15½ per cent of the contents of the stomachs examined. In November the percentage fell to 9¾; in December to about 4, with a slight increase in January; while in February this average was doubled, and in March reached almost 9½. These figures naturally reflect the conditions of the food supply. In October most acorns ripen and fall, and the Crows easily obtain large quantities, either directly from the trees, or from the ground. By the middle of November few acorns are left upon the trees, and the fallen leaves have hidden part of those on the ground. In December and January snow usually covers the ground, and the supply of acorns must be obtained from places swept bare by the wind, from edges of streams, and springy places where the snow does not accumulate, or from the bare ground during occasional thaws. A large proportion of the Crow stomachs taken in December and January were collected during snowy weather, when such food must have been extremely hard to find. In February and March the melting snow again exposes the acorns, which are all the more acceptable from the fact that the cornfields have been so carefully gleaned already. It is remarkable that, in spite of the abundance of fruit and other soft vegetable food, Crows continue to find and eat acorns all through the spring and early summer. The quantity eaten is small during most of this time, but some at least are found in every month except August, while in July the average exceeds 3 per cent. This surely indicates considerable skill and diligence in hunting out the old acorns which have laid hidden so long. It is by no means impossible that Crows, in times of scarcity, draw upon hoards of food hidden by themselves or by other animals during seasons of plenty. As to the agency of birds in the dissemination of seeds, the reporters above named remark:—"The number of seeds distributed by Crows is enormous, and since it has been shown by experiment that the vitality of such seeds is not impaired by the partial digestion to which they are subjected, it is evident that the Crows effect the distribution of many plants. Reference to the chapter on the vegetable food above quoted will show that the stomach contains fruit seeds at all seasons, but especially during the autumn. It is certain, therefore, that southward-bound Crows deposit the seeds of many common fruits all along their migration route. Some of these, as the wild cherry (*Prunus*), flowering dogwood (*Cornus*), and the red cedar (*Juniperus*), produce valuable and beautiful trees or shrubs, while others, like the poison ivy and poison sumach (*Rhus*), are detestable weeds. In the vicinity of roosts such seeds are sown by the million; many of these survive, and add to the store of food for birds, and some to the misery of mankind."

Nesting of the Goldcrest.—As to the nesting habits of the Goldcrest in this locality, to which my friend Mr. Mitchell lately drew attention (Zool. 1895, p. 385), I believe that these little birds depend a great deal on the character of the locality which they frequent. If it is sheltered from wind, and abounds in spreading young silver firs, the Goldcrests here build a very neat nest under the branch. There is such a place near my house, and I can always find two or three nests there in the season; but I have always noticed that in exposed places, where the wind would be likely to blow the branches about, the Goldcrests prefer to nest against an ivy-covered tree, or in a furze-bush, and in such places their nests are not nearly so neat. Thus many birds adapt their habits to circumstances. I once found a Mistle Thrush's nest in a hole in a wall, the explanation being that there were no trees near.—G. H. Pentland (Black Hall, Drogheda).

Nesting of the Goldcrest.—Referring to the correspondence which has appeared on the nest of the Goldcrest (Zool. 1895, pp. 385, 431, 448), I send a few notes which may be of interest. I never saw the nest of this bird against the trunk of a tree, but always on a branch. It was generally in a young spruce, and a few feet from the ground, sometimes above, oftener below, the branch. Early in the nesting-season of 1888 I knew of a nest, the situation of which was rather unusual. It was near the top of a full-grown spruce, about forty feet from the ground, in the usual position under a branch well clothed with the green fir-needles. The birds forsook this nest before any eggs were laid. In May, 1889, I saw a nest built above a branch of spruce only three or four feet from the ground, and at a little distance from the trunk. I may mention that in this case, contrary to the usually shy habits of the Goldcrest, the bird would allow itself to be touched when sitting on its eggs.—J. W. Payne (Edinburgh).

Nesting of the Goldcrest.—I should like to point out to Mr. H. A. Macpherson that the *original* issue raised by Mr. A. T. Mitchell was confined solely to the fact of the Goldcrest building "commonly against the sides of *ivy-covered* trees" in a certain Irish district, in contradistinction, as he had supposed, to the habits generally adopted by the species in England. I deny that there was any question raised as to the nest being placed in other situations, such as in furze-bushes or low junipers; and Hewitson's statement, recorded in the fourth edition of Yarrell, and reproduced by Mr. Macpherson, is absolutely irrelevant. So far as my researches have extended—and I have consulted no less than thirty ornithological publications—Montagu and Mudie alone make any allusion to the Goldcrest nesting *amidst ivy clinging to the boles of trees*; and when I found Yarrell, Howard Saunders, Bowdler Sharpe, Seebohm, Harting, Meyer, Hewitson, Macgillivray, Adams, Syme, Selby, Jennings, Atkinson, Jardine, Stannard, Hudson, Neville Wood, Swaysland, Harcourt-Bath, Gordon, Knapp, Morris, Bewick, Johns, Bechstein, J. G. Wood, Butler, and C. Dixon never so much as making even incidental mention of this site being utilised, I said truly, and say again, that it is "one which authors with common consent have apparently ignored." I repeat, the point of Mr. Mitchell's original note, and of my subsequent communication, had reference solely to the Goldcrest nidificating against the sides of *ivy-covered* trees, as the numbers of 'The Zoologist' for October and November will bear witness; and though Mr. Macpherson remarks that the fourth edition of Yarrell tells us "such a situation is occasionally adopted," I beg to say, with all deference, that it does nothing of the kind, as any one can see who will take the trouble to refer to page 451 of vol. i. of the fourth edition of that justly-famed work. So far as I personally am concerned, the matter ends here, though I may add that I strongly object to being misrepresented, and that I presume Mr. Mitchell would not have penned his note to 'The Zoologist' in the first instance, unless he too had studied the writings of ornithologists, on the specific point at issue to the same intent as myself. —H. S. DAVENPORT (The Cedars, Skeffington, Leicester).

The Jay: Extension of Range in Ireland.—There were two Jays here for some months last spring. I never heard of a Jay in Louth before. I also saw a Jay at Glenstal, in Co. Limerick, in November. None had been seen there for many years, and these occurrences make me think that the Jay may be extending its range in Ireland like the Squirrel. I should be glad to know whether any of your readers can corroborate this view. The Squirrel is spreading very fast indeed.—G. H. PENTLAND (Black Hall, Drogheda).

Quails in England in Winter.—In 'The Zoologist' for October last, a correspondent in the Isle of Wight reported seeing a Quail near Shanklin, early in that month, and enquired whether that bird is often met with here so late in the season. It may be of interest, therefore, considering the proximity of the locality in which I reside to the Isle of Wight, to state that two of these birds, at least, have been obtained here as late in the season as December; one in 1892, and the other on Dec. 12th, 1893 —ALEC GOLDNEY HEADLEY (Porchester, Hants).

The Soaring of Gulls. — Although Gulls cannot be regarded as typically soaring birds, they may be seen performing this phenomenon of flight, and sometimes under conditions which would appear to render the performance impossible to any but distinctly soaring birds. On Dec. 21st I observed a number of Gulls soaring at a great elevation for seventeen minutes, during which I failed to perceive the slightest movement of the wings. The birds (three immature examples of *Larus argentatus*, or *L. fuscus*) commenced soaring over a sloping cliff and gradually rose, at the same time extending seawards, until they appeared the merest specks, and were at last lost to view. The wind was a strong one, coming in straight from the sea. According to the views of Dr. Airy and Lord Rayleigh ('Nature,' xxvii. pp. 590–2, 534–5, as well as those expressed in Professor Newton's 'Dictionary of Birds,' p. 271, where will be found some admirable comments on this subject by Professor Roy), there is nothing remarkable in Gulls soaring over sloping ground facing a strong wind; but it is by no means easy to understand how these birds were enabled to prolong their soaring at great heights, and over the open sea.—W. C. J. RUSKIN BUTTERFIELD (St. Leonards-on-Sea).

[On this subject the reader may be referred to a valuable article entitled "The Problem of the Soaring Bird," which was originally published in 'The American Naturalist' for 1885, and is reprinted in 'The Zoologist' for 1886, pp. 54–67. When it is stated that the writer, Mr. J. Lancaster, devoted five years to the study of the birds on the Gulf-coast of South Florida (where soaring species were to be found in abundance), and that his daily observations were carried on sometimes (p. 60) for fourteen consecutive hours at a stretch, some idea may be formed of the attention which he must have paid to the subject, and of the consequent value of his published remarks.—Ed.].

Sabine's Gull near Weymouth.—The autumn of 1893 was signalised by the occurrence of several examples of *Xema sabinii* on the western coasts of England. I have just had the pleasure of adding to the Carlisle Museum an immature bird which was killed near Weymouth early in November, 1893. It was shot by a Mr. Lee, and was examined while still warm by Mr. S. H. Wallis, through whose kindness I was recently able to purchase it. If, as I imagine, this specimen was not recorded at the time, it may perhaps be as well to publish its occurrence before it is forgotten. —H. A. Macpherson (11, Victoria Place, Carlisle).

Little Gull in Sussex.—Whilst walking on the beach near Winchelsea, on December, 14th 1895, I met a gunner with an immature specimen of *Larus minutus*, Pall., which had just been shot. During the winter of 1893—4 no fewer than eight of these beautiful birds were shot on this coast, most of which I saw. Particulars will be found in the following list, which I am able to supply through the kindness of Mr. Bristowe, of St. Leonards, and Mr. Jeffery, of Hastings:—

1. Immature male, Bexhill, Oct. 12th, 1893.
2. Adult male, Hastings, Dec. 20th, 1893.
3. Immature female, Hastings, Jan. 4th, 1894.
4. Adult male, Bexhill, Jan. 5th, 1894.
5. Immature female, Bexhill, Jan. 5th, 1894.
6. Immature female, St. Leonards, Jan. 8th, 1894.
7. Immature male, St. Leonards, Jan. 8th, 1894.
8. Adult male, St. Leonards, Jan. 8th, 1894.

It will be noticed that six of the birds were shot in the beginning of January, and that, while the males were mostly adult, the females were all immature.—W. C. J. Ruskin Butterfield (St. Leonards-on-Sea).

Local Birds nesting in Perthshire.—With reference to Mr. Cordeaux's notes recently published in the 'Annals of Scottish Natural History,' it may be of interest to state that I have once—but only once—obtained the nest and eggs of the Garden Warbler in Perthshire. The site was a very unusual one, *viz.* high up in a tall hawthorn hedgerow. Local dealers confound this species, *Sylvia hortensis*, with the Blackcap, *S. atricapilla*, which, though far from common, nests regularly in small numbers in the district. The Tree Pipit, *Anthus trivialis*, nests regularly in limited numbers. It appears, however, to be on the increase. The district to which these remarks apply is situated a few miles to the north of the city of Perth. It is richly wooded and well watered, and consequently favourable to the investigation of bird life. The Yellow Wagtail, *Motacilla raii*, and the Woodcock, *Scolopax rusticula*, nest every spring in very small numbers; but even in so small an area both species are unaccountably local in their nesting haunts. The former species is confounded with the Grey Wagtail, *Motacilla melanope*, by local dealers, a bird which is far from common. Perhaps the greatest treasure which I have found in this district is the nest and eggs of the Grasshopper Warbler, *Locustella nævia*. I have never known another instance of the eggs of this bird having been taken in the neighbourhood of Perth. The Nightjar, *Caprimulgus europæus*, is said to nest in this district; but though I have searched diligently, and have employed collectors for the purpose, I have never been fortunate enough to find its eggs; nor have I heard its cry in that part of Perthshire.—J. B. Dobbie (3a, Pitt Street, Edinburgh).

Ornithological Notes from Mid Wales.—A few occurrences of the past year may be worth recording. On Jan. 26th Wood Larks were migrating, owing to the snow-fall of the previous night. A Bittern, in extremely poor condition, was sent from Pembrokeshire on Feb. 4th; and on the 18th a Great Crested Grebe was shot at Llanrhystyd. The frost brought Bramblings and Snow Buntings; a few Pintails and Golden-eyes visited the Dovey, but no rarities. Mistle Thrushes were so completely killed off by the frost that I did not see a single one for the next nine months. Very few Stonechats survived. Goldfinches have become scarce, and many birds which appear less likely to be affected—as Herons and Buzzards—show a similar marked decrease in numbers. On March 1st I found a pair of Ravens tenanting a new nest upon the sea-cliff near the usual site, and met with a pair of Choughs within a short distance of the town. The Chiffchaff was heard in the Mawddach estuary about Barmouth on March 23rd, and the Wheatear reached Aberystwyth on the 24th. On April 9th I looked into a Raven's nest which contained well-grown young ones. The site is a fine one—on rocks which overhang a deep and dark pool, whose Welsh name may be rendered "the Infernal Pit." On the same day I saw a Kite, and may as well mention here that the attempts of these birds to breed were, as usual, unsuccessful. On May 19th two, if not three, sets of eggs were taken by one party. A dealer has disposed of several clutches at £4 the clutch, and it has now become usual to cut away the branches to take the nest as well. There may be five pairs of these fine birds left, but all chance of young ones being reared is now at an end, and nothing is left for the Kite's well-wishers but to hope that it may find in speedy extinction its only possible refuge from persecution. The birds themselves are seldom shot, but must shortly succumb to the persistent and relentless attack of egg-collectors. It is doubtful if a watcher in the neighbourhood of each nest could give adequate protection. In regard to Welsh names of birds, it may be of interest to note that I have never heard the Buzzard called *boucath* in Mid Wales, but invariably *boda* or *boda llwyd*, i. e. "the grey Buzzard"; while the Kite is sometimes known as *barcud* or *barcutan*, but more commonly *boda wenol*, "the Swallow-Buzzard," from its forked tail.* On April 17th young Ravens were squeaking in a nest upon the cliff to the north of this town, some twenty-five feet above the beach. On the 18th I found the Cormorants already at their nests upon the Bird Rock; one was apparently sitting. On the 30th the first Whimbrel appeared, on the spring passage. Wheatears of the larger northern race were passing along shore on May 1st; one of them perched on a furze-bush. On the 8th I found well-fledged young in a Raven's nest near Plynlimmon; the nest was easily reached, being only fifteen feet from the foot of the rocks. A pair of White Wagtails were migrating along shore on the 11th. On the 15th I found two Kestrel's eggs in an untenanted Raven's nest. Upon a heather-grown peat bog, on the 22nd, I came across three nests of Teal with eggs: two of the nests were only fifteen yards apart. On the 25th I found the Pied Flycatcher numerous in its usual haunts in north Carmarthenshire. A Greater Spotted Woodpecker was breeding in a stunted oak, upon the side of one of the upland dales. On June 1st I saw the whole family of Ravens, referred to under date March 1st, upon the wing. On the 6th I found the dried remains of a Fulmar Petrel upon the beach. A party of Wood Larks, on the 14th, were feeding upon the seeds of the sea-campion (*Silene maritima*). Several of them, when approached, squatted, only rising as I came within four or five yards. On the 15th, near Devil's Bridge, I found young Buzzards fully fledged, in their nest at the top of a straight slender larch. At the end of the month, in a walk along the north Pembrokeshire coast, I visited some of the less-known sea-bird haunts of that county. Here the Shag, so scarce at Aberystwyth, largely replaced the Cormorant. More than one pair of Falcons had bred successfully, and the young were strong on the wing; and in two or three places the Buzzard appeared to be nesting in the sea-cliffs. I met with the Cirl Bunting at Newport, and again at Fishguard. The Stock Dove was numerous, but I failed to find the Rock Dove, though the coast appears well suited to its requirements. The well-known herd of goats at Dinas Island, where they have run wild for several generations, now numbers twenty-two. None at present have heads of a size to compare with two specially fine ones which were presented to the Zoological Society in 1869. Choughs are fairly plentiful, though there is a keen demand for their eggs, as for those of all the rarer birds, so that the chief sea-bird haunts near St. David's are harried every year to an increasing extent by the local fishermen. The Gannets at Grasholm, in whose favour popular sympathy was enlisted some years since, are now plundered almost annually.—J. H. Salter (Aberystwith).

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* See 'Zoologist,' 1891, p. 173.—Ed.

INSECTS.

Vanessa antiopa at Epsom in December.—A specimen of the Camberwell Beauty, *Vanessa antiopa*, was captured in the drawing-room of a house at Epsom on Dec. 19th. The family were seated round the fire at about 7.30 p.m., and a log of wood had been recently added to the coals, when the butterfly in question was observed crawling amongst the cinders and ashes in the grate. It was at first supposed to have come down the chimney; but the more reasonable explanation probably is that it had hybernated in the log of wood which had been recently put on the fire.—John Bucknill (Hylands House, Epsom).

SCIENTIFIC SOCIETIES.

Linnean Society of London.

December 5th, 1895. — Mr. C. B. Clarke, F.R.S., President, in the chair.

Messrs. Bernard Arnold and Rupert Vallentin were admitted, and the following were elected Fellows of the Society:—W. M. Christy, Rev. H. P. Fitzgerald, A. W. Geffcken, Rev. E. A. Peacock, Rev. T. R. Stebbing, and W. O. Stentiford.

The President called attention to a portrait of the late Prof. Babington, of Cambridge, which had been lately presented by his widow to the Society. On the motion of Dr. Murie, seconded by Mr. A. W. Bennett, a vote of thanks to Mrs. Babington was unanimously accorded.

Prof. Stewart offered some remarks on the types of the axes of certain *Gorgonaceæ*, in which he referred chiefly to the alleged importance or otherwise of the presence of spicules in the axes, and exhibited the following species in illustration of his remarks:—*Paragorgia arborea*, *Melitodes ochracea*, *Suberogorgia suberosa*, *Corallium rubrum*, *Caligorgia verticillata*, *Verucella guadalupensis*, *Isis hippuris*, *Plexaurella crassa*, and *Eunicella verrucosa*. Some criticism was offered by Dr. Murie chiefly in relation to the structure of *Gorgonia flabellum* and *Gorgonia setosa*.

Mr. Martin Woodward exhibited and made remarks on a living specimen of *Ouramœba*, which he thought should be regarded as a common *Amœba* attacked by a parasitic fungus.

Mr. G. C. Druce communicated a paper on a new species of grass in Britain belonging to the genus *Bromus*, for which, from the character of its inflorescence, the specific name *interruptus* was proposed. It appeared to have been characterized by Prof. Haeckel as *Bromus mollis* var. *interruptus*, but Mr. Druce considered that it was sufficiently distinct to be entitled to specific rank. He had found it growing abundantly in a field of vetches near Upton, Berkshire, and specimens had been examined from Headington, Oxford, and Dartford, Kent. In a discussion which followed, Dr. O. Stapf reviewed the literature of the subject, and gave reasons for regarding the so-called new species as merely an abnormal growth of *Bromus mollis*. Critical remarks were made also by Mr. H. Groves and Mr. A. B. Rendle, who were inclined to share the opinion of the last speaker.

A paper was then read by Mr. W. F. Kirby on some new or little-known *Phasmidæ* in the collection of the British Museum, with illustrative specimens.

Dec. 19*th*.—Mr. W. P. Sladen, Vice-President, in the chair.

Mr. William Scott was elected, and the Rev. T. R. Stebbing, Rev. H. P. Fitzgerald, and Mr. A. W. Geffcken were admitted Fellows of the Society.

Mr. W. B. Hemsley exhibited specimens and photographs of *Cacteæ* from the Galapagos Islands, and gave an account of some of the more remarkable species.

Mr. George Brebner exhibited and described, with the aid of microscope and lantern-slides, the following new and rare Algæ:—*Colaconema Bonnemaisoniæ*, Batters; *C. chylocladiæ*, Batters; *Trailliella intricata*, Batters (*Spermothamnion Turneri*, var. *intricata*, Holmes & Batters, 'Revised List Brit. Algæ'); *Ectocarpus velutinus*, Kütz., var. *laterifructus*, Batters; and *Hymenoclonium serpens*, Batters (*Callithamnion serpens*, Crouan). These were found by Mr. Brebner while studying the marine Algæ of Plymouth and the neighbourhood. The first two are endophytic and new to science; the discovery of the tetraspores of the third (which in regard to position and development are unique in the group to which it belongs) justified the creation of a new genus for its reception (*cf.* Journ. Bot. 1896, p. 8). The fourth is a variety of a well-known parasite on *Himanthalia lorea*, Lyngbye, probably only a late autumn and winter form not hitherto described. The fifth was a young specimen of a rare Alga first discovered in this country by Mr. Holmes, and found, like the others, in Plymouth Sound.

Mr. J. E. Harting exhibited a living specimen of the Snow Bunting, *Emberiza nivalis*, which had been captured with several others off Cape Race on board the s.s. 'Ottoman' in October last, during the voyage from Boston to Liverpool, as mentioned at a former meeting (November 7th).

Mr. A. Rolfe gave an abstract of a paper entitled "A Revision of the genus *Vanilla*," in which some fifty species were enumerated, seventeen of which were described as new, though five of them had been previously confused with older forms. The paper was illustrated by a series of carefully-made drawings.

Mr. E. S. Goodrich communicated a Report on the collection of Cephalopoda in the Calcutta Museum. He explained that this collection had been forwarded from Calcutta to Prof. Ray Lankester, at whose request he had undertaken to examine and report upon the species. It contained 162 specimens, almost all of which were collected in the Indian seas from the Persian Gulf to the coast of Australia, during the cruise of H.M.S. 'Investigator.' Fifteen genera were represented, and several new species were described belonging to the genera *Cheiroteuthis, Histiopsis, Abralia, Doliolus*, and *Faonius*. The paper was illustrated by original drawings.

ZOOLOGICAL SOCIETY OF LONDON.

December 3rd, 1895.—Sir W. H. FLOWER, K.C.B., LL.D., F.R.S., President, in the chair.

The Secretary read a report on the additions that had been made to the Society's Menagerie during the months of October and November, 1895, and called attention to the acquisition of a specimen of the Wild Goat of the island of Giura, in the Ægean Sea (*Capra dorcas*).

Mr. Tegetmeier exhibited a Crab with a supernumerary claw.

A communication was read from Dr. G. S. Brady, containing a supplementary report on the Crustaceans of the group *Myodocopa* obtained during the 'Challenger' Expedition, to which were added notes on other new or imperfectly known species of this group.

Mr. F. E. Beddard communicated some points in the anatomy of *Pipa americana* and on the diaphragm and the muscular anatomy of *Xenopus*, with remarks on the affinities of these two anomalous Batrachians, which he considered as correctly placed together in the system.

Mr. W. Bateson gave an account of the colour variations of a variable Beetle of the family *Chrysomelidæ* (*Gonioctena variabilis*) statistically examined. It was shown that the individuals are chiefly red spotted with black, or else greenish grey striped with black. Intermediate forms occurred, but were less common than the type-varieties. These facts illustrated the phenomenon of organic stability.

A communication from Mr. R. Lydekker contained remarks on the affinities of the so-called extinct Giant Dormouse of Malta, to the effect that this extinct rodent did not belong to the *Myoxidæ*, but rather to the *Sciuridæ*, unless it were necessary to assign it to a separate family. He proposed for its reception a new genus, *Leithia*.

A communication was read from Mr. W. E. J. Bramley describing the mode of capturing Loder's Gazelle, *Gazella loderi*, adopted by the Arabs of the Western Desert of Egypt.

Mr. G. A. Boulenger described a new Snake, *Typlops nigricauda*, and a new Frog, *Chiroleptes dahlii*, from Northern Australia. A second paper by Mr. Boulenger contained an account of the type-specimen of *Boulengerina stormsi*—an Elapoid Snake from Lake Tanganyika, recently described by M. Dollo.

December 17*th.*—Sir W. H. FLOWER, K.C.B., LL.D., F.R.S., President in the chair.

Dr. Donaldson Smith offered some remarks on some of the animals observed by him during his recent journey to Lakes Rudolph and Stephanie, and alluded especially to the species of Zebras and Antelopes encountered during his journey.

Mr. Sclater exhibited and made remarks on the head of an Antelope obtained in Kavirondo, British East Africa, by Mr. E. Gedge. This Antelope had been hitherto identified with the "Kob" of Western Africa, but appeared to belong to a distinct species, to which the name *Cobus thomasi* had been given by Herr Neumann.

Mr. G. F. Hampson read a paper on the classification of two subfamilies of the Moths of the family *Pyralidæ*, the *Schœnobiinæ* and *Crambinæ:* in the former subfamily twenty-five genera were classified, in the latter thirty. Both subfamilies were stated to be parallel developments with the *Hydrocampinæ* from the primitive stock of the *Pyralidæ*, represented among living forms by the more generalized *Pyraustinæ* andthe *Scopariinæ*.

A communication was read from Mr. Oldfield Thomas on *Cænolestes*, a still-existing survivor of the *Epanorthidæ* of Ameghino, and the representative of a new family of recent Marsupials. The specimen upon which the new genus and species (*Cænolestes obscurus*) was based had been received from Bogota. The mammal described by Tomes in 1860 as *Hyracodon fuliginosus*, from Ecuador, was a second species of the same genus, and the name *Hyracodon* being preoccupied, *Cænolestes* was proposed in its place.

Mr. Walter E. Collinge read a paper on the sensory and ampullary canals of *Chimæra*, and the innervation of the same. After describing the Elasmobranch character of the sensory canals, the author pointed out that, in addition to the ampullary canals described by Leydig, there were two other forms which were now described for the first time.

Mr. F. A. Bather read a paper on the fossil crinoid *Uintacrinus*, containing a complete morphological description of *Uintacrinus socialis*, based on specimens from the Upper Cretaceous Beds of Western Kansas, now in the British Museum. The deficiencies of previous accounts were made good, and their errors corrected.

A communication from Mr. W. Bateson contained a correction of a passage in a paper on Colour-variation in Flat Fishes recently read before the Society.

A communication from Dr. C. Brunner von Wattenwyl gave a list of the Orthoptera of the Hawaiian Islands. It combined the result of the examination of Mr. Perkins's first collections with what was previously known on this subject, a total of twenty-nine species being thus obtained. A new genus and six new species were described.—P. L. SCLATER, *Secretary*.

ENTOMOLOGICAL SOCIETY OF LONDON.

October 16*th*.—Prof. RAPHAEL MELDOLA, F.R.S., President, in the chair.

Sir Gilbert T. Carter, K.C.M.G., of Government House, Lagos, West Africa; and Mr. Sydney Wacher, F.R.C.S., of Dane John, Canterbury, were elected Fellows of the Society.

The President announced the deaths of Prof. C. C. Babington, the last but one of the original members of the Society, and Prof. C. V. Riley, one of the ten Honorary Fellows of the Society, and commented upon their scientific work.

Mr. W. F. H. Blandford spoke at some length on the valuable services rendered by the late Prof. Riley to the cause of Economic Entomology, and referred to the enormous number of papers and memoirs on the subject which he had published.

Mr. F. C. Adams exhibited (1) a series of nineteen *Merodon equestris*, containing several varieties, showing their resemblance to wild bees of the family Apidæ, and made a few remarks on mimicry; (2) specimens of *Leptomorphus walkeri*, Curt., taken in the New Forest in September last; (3) *Melanostoma hyalinatum*, Fln. (male and female), from a series of eighteen also taken in the New Forest in the latter part of August; and (4) a specimen of *Spilomyia speciosa*, Rossi, from the New Forest.

Mr. Enock exhibited, and made remarks on, specimens of the mature sexes, and the nest of *Atypus piceus*, the British Trap-door Spider; specimens of *Andrena atriceps*, and males of *A. fulva*.

Mr. Tutt exhibited a long series of *Erebia nerine*, captured in the Tyrol, and read notes on the species.

Lord Walsingham exhibited the types and paratypes of *Pseudodoxia limulus* (Rghfr.), together with the larval cases and a preserved larva. In 1889 Herr Rogenhofer gave the name *Fumea ? limulus* to the case and its contents, and Mr. McLachlan agreed from the evidence then adduced that the insect was lepidopterous rather than trichopterous.

Mr. C. J. Gahan exhibited, for Mr. Turner, an imago and some larval forms of *Ledra aurita*, Linn.

Mr. G. C. Griffiths exhibited, and read notes on, hybrids between *Platysamia cecropia* (male) and *P. gloveri* (female); between *P. cecropia* (male) and *P. ceanotha* (female); and between *Actias luna* (male) and *A. selene* (female).

Lord Walsingham read a supplementary note on *Grapholitha*, Hb.

Dr. A. G. Butler communicated a paper entitled "Notes on Seasonal Dimorphism in certain African Butterflies."—H. Goss, *Hon. Secretary.*

November 6th.—The Rt. Hon. LORD WALSINGHAM, F.R.S., Vice-President, in the chair.

Mr. Cecil W. Barker, and Lieut. H. G. R. Beavan, R.N., were elected Fellows of the Society.

Lord Walsingham announced the death of Mons. E. L. Ragonot, President of the Entomological Society of France, and, since 1887, a Foreign Fellow of the Entomological Society of London, whose loss would be felt by entomologists all over the world.

The Secretary read a letter from Mr. Waterhouse, calling attention to the prospectus of a Monograph by Mr. Ernest Green on the *Coccidæ* of Ceylon.

Mr. Stevens exhibited two larvæ, supposed to be those of a species of *Anobium*, which had been damaging oil paintings in his possession; also two specimens of a luminous species of *Pyrophorus*, which he had received alive from the West Indies.

Mr. Adkin exhibited a portion of a collection of Lepidoptera made in Hoy, Orkney, in 1895, including *Agrotis vestigialis*, *A. tritici*, and *A. cursoria*, not previously recorded from Orkney. Mr. Barrett, Mr. McLachlan, and the Chairman made some remarks on the collection.

Mr. Tutt exhibited a series of *Emydia cribrum* var. *candida*, which he had bred from eggs obtained from a specimen caught by Mr. Merrifield in May, 1895, in Northern Italy. He stated that being unable to obtain *Calluna vulgaris*, the ordinary food-plant, he had tried the larvæ with knot grass (*Polygonum aviculare*), and had no difficulty in rearing them.

The Rev. Canon Fowler exhibited, on behalf of Prof. Poulton, living specimens of *Diapheromera femorata* bred from eggs received from Prof. Titchener, of Cornell University, New York. The young larvæ had emerged from the eggs in July and August and fed on lime. Several pairs had arrived at maturity, and were feeding in cases in the Oxford Museum,

The Rev. J. H. Hocking exhibited a specimen of *Xylina zinckenii*, taken by him at sugar on the trunk of an oak tree at Copdock, near Ipswich, on Sept. 30th. It had apparently only recently emerged from the chrysalis. He also exhibited two specimens of *Xanthia ocellaris* taken at the same time. Mr. Barrett referred to the few recorded captures of *X. zinckenii* in this country.

Mr. R. W. Lloyd exhibited male and female specimens of *Amara alpina* from Garvell, Perthshire.

Colonel Swinhoe stated that he had, during the past summer, captured four specimens of *Pieris daplidice* at Deal. They were worn and had probably been blown over from France. Mr. Tutt had collected at Deal for many years, but had never met with *Pieris daplidice* there.

Mr. Tutt read a paper, communicated by Prof. A. R. Grote, entitled "Notes on the genus *Cidaria*."

Dr. T. A. Chapman read a paper entitled "Notes on Pupæ: *Orneodes, Epermenia, Chrysocorys*, and *Pterophorus*." Lord Walsingham, Mr. Blandford, and Mr. Tutt took part in the discussion which ensued.—H. Goss and W. W. Fowler, *Hon Secretaries.*

NOTICES OF NEW BOOKS.

Sport on the Pamirs and the Turkistan Steppes. By Major C. S. Cumberland. With Frontispiece and Map. 8vo, pp. i—x, 1—278. London: Blackwood & Sons. 1895.

In this very interesting volume we have an account of an expedition which the author, in 1889, planned and carried out from India into Kashmir, Chinese Turkestan, the Pamirs, and Asia Minor. At that time comparatively little was known of the particular regions visited by him, and not much interest was taken in them; but subsequent Russian claims and expeditions to our frontiers beyond Gilgit brought these countries more prominently under notice. The author having travelled over a greater area than that described by other explorers, and having frequently left the main caravan routes to hunt over mountains not generally visited, he very wisely, as we think, decided to publish the results of his experience. A good route map shows the course of his travels, and the book abounds with incident attractive alike to naturalists and sportsmen, to say nothing of the valuable details which are given concerning the physical geography of the countries explored. Major Cumberland's chief ambition, it would seem, was to find the *Ovis Poli* in its native haunts, and obtain with his own rifle some typical heads and horns of this magnificent wild sheep, which has been named in honour of Marco Polo. His description of the wild snow-clad regions in which it is to be found, often at an elevation of 15,000 to 18,000 feet, and of his numerous successful and unsuccessful stalks, is most thrilling; and his observations on the appearance and habits of the animal as viewed by him in a state of nature brings vividly before the reader the scene of his stirring adventures.

To naturalists his remarks upon *Ovis Karelini* (which under some misapprehension he styles *Ovis Carolini*), are instructive, since they tend to prove that although considered by some who have never seen it alive to be specifically distinct from *Ovis Poli*, it is at most only a lowland variety of that animal. On this point he writes:—

> "I could not see the slightest difference in this *Ovis* to that of the Pamirs. No doubt it is found at a much lower altitude, as this steppe (the Tian Shan range) was barely 7000 fest above the sea; and it is quite possible that in the summer there might be a slight difference in the colour and length of the hair; but otherwise the two appear to be identical."

This confirms the opinion of Mr. Blanford, who does not consider them distinct. After measuring and comparing a series of eleven skulls, he arrived at the conclusion that the alleged differences in the curvature of the horns are merely individual, and that a complete transition can be traced between the extreme modifications. It is highly probable that the so-called *Ovis Heinsi*, also from the same region, has no better claim to specific distinction.

Major Cumberland's remarks upon the wild Camels seen by him while camped at Bashkiok, on the edge of the great Gobi Steppe, recall to mind the account given of these animals by the Russian traveller Prejevalski:—

> "At Bashkiok," he says, "a cavalcade approached with two bullocks laden with something the nature of which I could not discern, but which, on coming nearer, proved to be portions of a Camel, the head just as it had been cut off, and some huge joints of meat. I was much interested, and asked the shikari where he had got it. He said that the Camels came to a place on the edge of the great desert of Gobi, about twenty-five miles off, to drink water and graze on a certain kind of grass that grew there; in his time he had killed several of them there. This seemed an unusual opportunity, and I told him I should like to shoot a specimen. He replied it was very unlikely we should get another, for now that the snow lay about, they went away to the heart of the desert, and did not return to drink at the

pools until it had all disappeared, as the snow sufficed for their wants. However, we might try, and failing my getting one, I could take this head and skin.*

"I tried some camel-steak for dinner, but found it very tough.

"The specimen the shikari had brought back was a full-grown female, and, junging by her teeth, pretty old. She must have been a very handsome beast, and in size much the same as the tame species. The head was beautifully shaped, and showed high breeding—very broad across the forehead, with a tapering muzzle. In colour the hair was a bluish grey, rather short, but close and fine, with an undergrowth of *pushm*; on the head it was so fine as to be more like fur. The bumps, of which there two, were small, and the animal altogether quite a different species from the ordinary Bactrian Camel used in the country, and bred in the hills" (p. 171).

In Kashmir the author had some very varied sport. In an expedition to Pangi, where he was first in the field, crossing over the Chini Pass—now forbidden as dangerous—he shot ten Ibex, eight Bears, and seven Musk Deer. From there he went to Zanskar, to try for Burrel (*Ovis nahura*), but saw no heads worth trying for; so proceeded to Leh, whence, after twelve days' march, he reached the Kobrang Valley, where traces of Yak (*Bos grunniens*), were found, and two of these animals were shot, one of them a very fine bull. Moving back to Kiam, in Chang Chenmo, he shot a couple of Antelopes, after some difficult stalking on the open grass plain—presumably *Gazella picticaudata*—and crossing over the Marsemik Pass, came across a herd of Burrel, one of which he secured. Two days having been spent unsuccessfully in pursuit of a herd of *Ovis ammon*, he returned to Kashmir, to plan a fresh excursion up the Rupel Valley, west of Nanga Parbat, into Chilas, in search of Markhor. Great was his joy on discovering a herd of these fine wild goats, and greater still was his satisfaction when after a successful stalk he shot three of them. The horns "resembled the Kajinag heads as to twist, and were not in the least like the Astor heads." See the figures in Blanford's 'Fauna of British India,' Mammalia, pp. 506, 507.

Between Yarkand and Aked Major Cumberland had an opportunity of seeing a flight at the Jeran Antelope with a trained Eagle, and thus describes the incident:—

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* This the author did, and it was subsequently exhibited on his behalf in London, at a meeting of the Zoological Society, May 17th, 1892.

"The morning broke clear and fine, the mist and clouds having rolled off, and when I looked out the most lovely view greeted my eyes of the Tian Shan range, towering aloft full 24,000 ft., the immense height being doubly emphasised by the whiteness of the surrounding country, glistening with freshly fallen snow. The Beg had promised to come early and bring the Shikari with him, but he had been sent for in the night by the Dotai, to answer for the life of a man who had been found dead in the snow. However, later in the day, the Yulbeggie of the district appeared, saying he had been sent by the Beg to do my business, and that being something of a Shikari himself, he would take me to the best places for game. Accordingly we started for Khotan Kama, where he lived, about twenty miles away. On the way he suggested a hunt for Jeran with a trained Eagle which he had with him, but we found none. Then he proposed, after our arrival, to have a deer-drive in the forest; but after trotting me about here, there, and everywhere, without any result, I came to the conclusion he merely wanted to detain me at his village, so told him I could waste no more time.

"After Khotan Khama the country was quite wild, without any signs of cultivation or habitation. The junction of the Aksu and Khotan rivers with the Yarkand river occurs here, and from this point change their names for that of the river Tarim, which runs nearly due east until it empties itself into Lobnor. Near Khotan Kama a ferry crosses the Tarim and connects the road from Khotan to Aksu, which is a good deal used by the caravans carrying rice from one town to the other.

"For the twenty-four miles of jungle through which we tramped my shikari kept his Eagle on his wrist, but it was not until we got to our camping-ground, when he went off by himself to have a last look round, that he had any success, returning with a doe Jeran Antelope. I was anxious to see the Eagle work, and as I could see nothing of a stag, went off with the Yulbeggie in the afternoon to try for another Jeran. I was mooning along, thinking of something else, when all of a sudden the Yulbeggie started off as hard as he could gallop across the maidan. I followed suit, and soon made out a doe Jeran in the distance. It stood and looked at us in amazement, and then cantered off, not very fast, while we still continued our headlong career, every now and then floundering on to our noses over a tussock of grass, or into a hole hidden by the snow, until we got about a hundred yards from our game, which only then realised the situation and extended its stride. The shikari now hurled the Eagle, which he had unhooked and held clasped to his breast during the run, at the Jeran. The Eagle, instead of rising like a Falcon and swooping at its prey, flapped along with its great wings close to the ground; and although it seemed to fly very slowly, gradually caught up the Jeran, which was impeded in its course by the high grass, and at last grabbed it by the rump with its strong talons. It regularly dragged the deer down, and held on for some time, the little gazelle kicking out like mad. We still galloped on, and I wondered what the finish would be. The shikari, when he got up to them, without drawing rein, threw himself off his pony and grabbed the deer by the hind leg, just as it had kicked itself free, and pulling out his knife, cut its throat. It was a most exciting chase, and I enjoyed the gallop immensely. On another occasion the Eagle, after it was flown, did not see its quarry, and, after a vague flight, lit on the ground and began to scream; and the next time, when it was more successful, we were too long in coming up, and the deer had shaken it off, going on seemingly none the worse, while the Eagle, which was now on the ground, remained there screaming like a fool, without attempting to get on the wing again to follow its game."

Here we must take leave of the traveller, and close a volume which, after a recent surfeit of books on African big game, has seemed to us refreshingly attractive.

Birds from Moidart and Elsewhere. Drawn from Nature by Mrs. Hugh Blackburn. Small 4to, pp. 192. Edinburgh: David Douglas. 1895.

The rapidity with which books on Natural History are issued from the press at the present day, though hard upon reviewers, is in one sense a good sign. It argues not merely a steady sale for such works, profitable, we may hope, to all concerned in their production, but a healthy improvement in public taste. It indicates a desire, on the part of some readers, at least, for what is natural and true and beautiful, in preference to the sensational fiction which of late years has exercised so baneful an influence.

This is as it should be, although we are far from saying that all the books now written on Natural History are needed. More than half of them, it may be said, have no permanent value; they teach us nothing new; while in many cases the illustrations from an art point of view are deplorable, and from their inaccuracy too often misleading.

A work of art to be successful depends not merely upon originality of conception and perfect execution, but also upon truth in design. From this point of view it matters little whether the ablest craftsman has been employed to engrave the artist's lines if those lines are faulty; while their reproduction by "process," or photography, as a rule only emphasises the errors of conception. Much, therefore, is expected of the artist, and the success of his illustrations must largely depend upon the method of his work. So long as he is content to learn from Nature,—to study her beautiful outlines, her infinite variety of form, her sober harmonies and glorious contrasts of colour, transcribing what she teaches with fidelity and patience,—so long will he continue to approach perfection in his particular branch of art. Unfortunately other influences combine to mar his efforts, and to frustrate good intentions. Nothing is more detrimental to art, more calculated to pervert talent, than what may be called "the hurry of the age," the rapidity with which work is expected to be conceived and executed. A young artist, not already prepared with careful studies for what is wanted, may not have time to repair at once to the fountain source of inspiration. He must be content, alas! to rely upon the work of others, which he has to take upon trust for lack of sufficient experience to judge of its merits; to call in the aid of the photographer or the taxidermist; or to evolve something from his own "inner consciousness," with no certain light to guide him. To the true artist not one of these methods will commend itself.

We have been led to these reflections on turning over the pages of Mrs. Blackburn's sketches in the volume now under notice, which shows us clearly what an advantage it is for science-teaching when an artist is in a position to furnish faithful transcripts from Nature, instead of resorting for illustrations to any of the second-hand expedients above referred to. In saying this we must not be understood to give unqualified praise to all Mrs. Blackburn's productions. Her volume contains eighty-seven lithographic plates of birds, from original sketches made by her on or near the coast of Argyllshire, where she has long resided; but candour compels us to say that they are not all of equal merit. In many, perhaps most of them, she has been very successful in catching the characteristic attitude which so often distinguishes a species amongst its fellows, and enables an observer to identify it at a distance when too far off to perceive its colour. There is no mistaking her young Kestrels and Peregrines. The Redwing and Song Thrush, which to many people seem so much alike, are cleverly differentiated. The old and young Cuckoos are faithfully delineated. The Spotted Flycatcher feeding its fledgling, the Blue Tit on the larch, and the swimming Guillemot, with half-closed wings, on the point of diving, strike one as being all very true to nature. The letterpress which accompanies each plate, though often brief, is generally to the point, and often embodies some little fact worth noting. Mrs. Blackburn has lived long enough in Moidart to have observed some curious changes in the avifauna of the district. For example, Thrushes are much more numerous now, at Roshven, than they used to be, probably owing to the increase of cultivation and extension of garden ground. Forty years ago there were no Starlings in the neighbourhood. At first they began to appear at intervals, resting temporarily upon the islands; now a good many stay all the year round, and live in the dovecot with the Pigeons. When the author first came to reside in the district (1856) Sparrows were unknown there, now they are common; while the Yellowhammer, once more plentiful, has of late years decreased in numbers. The Brambling or Mountain Finch, although figured from a caged specimen, has not been detected in Moidart, and the Goldfinch has been observed only once. "It used to be common in the wild parts of Kirkcudbrightshire when there was less cultivation and fewer plantations." A curious habit of the Starling is noticed which we do not remember to have seen elsewhere recorded. A bird of this species was observed to run about on the gravel and insert its beak under loose stones, when by opening it wide it would, after the manner of a Turnstone, raise a pebble, and search beneath it for worms and insects. Respecting the habits of the Hooded Crow, she remarks:—"I have more than once observed these birds eating the berries of the mountain ash off the trees growing near the sea-shore, where there was apparently abundance of more congenial food." Their taste for these berries does not seem to be generally known.

Another observation that is new to us refers to the partiality evinced by the Wood Pigeon (*Columba palumbus*) for the flowers of the horse-chestnut. In the south of Scotland these birds are numerous; and Mrs. Blackburn has heard a tradition there to the effect that "they used in old times to build their nests on the ground; but their young having been so often destroyed by passing cattle, they took to nesting on trees. From that safe altitude they now shout to their former enemies in triumphant defiance, '*Coo-coo, come noo, come noo!*'" This recalls to mind what has been observed in the island of Samoa concerning the *Didunculus* or Little Dodo.*

A converse divergence of habit has been noted in the Jackdaw. Mrs. Blackburn says :—"I have seen their nests in the island of Inch Murrin, in Loch Lomond, among the roots of old oak-trees, some of them quite low down in the ground, others above, with great quantities of sticks both above and below."

The Red Grouse, as is well known, lives almost entirely upon heather, but will feed also in the oat-fields when these are situated on the edge of the moor. The food of the Black Grouse is very different. These birds feed largely on the buds of the bog myrtle ; Mrs. Blackburn has found their crops quite full of them, emitting a strong aromatic scent when opened. In winter she has found them full of alder catkins. Like the Red Grouse, however, they are also fond of frequenting the oat-fields. Some young ones which Mrs. Blackburn once captured in the heather were kept in confinement for some days, and thrived upon green peas until they were liberated.

The Partridge, we are told (p. 125), is "not a native of Moidart," and Mrs. Blackburn's experience, in an attempt to introduce it there, is rather curious. She says :—

> "We hatched some Partridge eggs in the incubator and tried to rear them, but without success. They seemed to thrive at first, and took their food well, but dropped off daily, and were all dead in a fortnight from no apparent cause. We then got four pairs of full-grown birds. They arrived during frost in winter, so we had to keep them enclosed for a time till thaw came, and fed them on fresh cabbage and grain. We let them out two at a time, to let them get accustomed to the place, for fear they should fly away together if they were all set at liberty at once. They remained near for some time, coming back for the food laid out for them, and sometimes feeding with the chickens or joining the Pheasants. They very soon took to feeding on the sea-shore, among the cast up sea-weed, and finding "hoppers" and other marine delicacies, showing rather a remarkable taste for inland-bred birds imported to London from Hungary. In due time they nested, and hatched small broods, but they all disappeared in the course of the year, probably having become the prey of Sparrowhawks, or escaped cottage cats, of which there are more than enough here."

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* See the observations on a change of habit in the *Didunculus*, by the Rev. J. S. Whitmee, quoted in an article on "Rare Birds now living in the Zoological Society's Gardens," 'The Field,' December 26th, 1874.

Perhaps the most interesting of all Mrs. Blackburn's sketches is that which she gives of the young Cuckoo ejecting from the nest the young of its foster-parent, a Meadow Pipit. The story is not new, for she published it many years ago, and had the satisfaction thereby of confirming the earlier statements of Jenner and Montagu, which had been doubted and even rejected as incredible by so good an observer as Charles Waterton. Her observations on the subject have been accepted and quoted by other naturalists,* and have since been fully confirmed by the late John Hancock from personal experience in the garden of his friend Hewitson at Oatlands, in Surrey,† a fact which Mrs. Blackburn might well have noted in her new volume.

We have not found in the letterpress to this volume much to provoke dissent, but a few slips here and there may be noted. For example, it is a mistake to suppose (p. 6) that the Little Auk (*Mergulus alle*) breeds in Shetland; nor is it quite accurate to state (as on p. 185) that "Herring Gulls and other *Laridæ* do not assume the adult plumage of white and grey for a year at least." The bird, to which some of the older writers have given the name "Wagel," is not, as Mrs. Blackburn supposes, the Herring Gull, but a Skua of some kind, as is evident from the description given of its habits, and referred to by herself under the head of Skua (p. 187).

It will be seen from the foregoing remarks that Mrs. Blackburn is not only a gifted artist, but has also the instincts of a true naturalist; and if the merit of her publication lies chiefly in her characteristic sketches of birds, its value is enhanced by the interesting notes which she has appended from her observation of their haunts and habits. It would be well, as we have already hinted, if other artists who furnish illustrations for books on natural history were to follow her example more closely, and appeal oftener to Nature for inspiration than we find to be the case.

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* See Gould, 'Introduction to the Birds of Great Britain' (p. 91); Harting, 'Summer Migrants' (p. 239); Newton, in 'Yarrell's British Birds' (ed. 4, vol. ii. pp. 396, 397); and 'Dictionary of Birds' (p. 120).

† See 'Zoologist,' 1886, p. 203.

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